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The purpose of this magazine is to inform young people and guidance personnel about benefits, opportunities, privileges and programs of military service.

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Controlled circulation paid at Richmond, Va.

Front and inside cover: Redeye gunner with his weapon shouldered is a threat to enemy aircraft and a comfort to fellow Marines on the ground. The photographs were taken by Staff Sergeant Steve Manuel of the Joint Public Affairs Office, Marine Corps Air Station, Cherry Point, N.C. Cover designed by Photojournalist Jim Graham, U.S. Coast Guard, assigned to Fleet Home Town News Center, Norfolk, Va.

Back cover:

The 1912 sinking of the Titanic brought about the creation of the International Ice Patrol to reduce iceberg hazards to shipping. This patrol is just another of the many functions of the Coast Guard.

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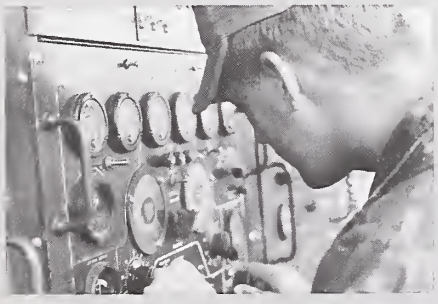

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Counselors' corner

This is the last issue for this publication year. Our next issue will be the October 1978 "Basic Facts" which summarizes programs, opportunities and benefits of the military in one handy guide.

During the new publication year we hope to bring you photofeatures about the interesting, demanding, challenging and sometimes thankless jobs of service people. You may see some changes in the format and style of PROFILE. We welcome your comments and criticisms. All the members of the staff join me in wishing you a pleasant summer.

Thinking of other uses for PROFILE? We've learned from Perry Gaalaas, education specialist with Navy Recruiting Station, Des Moines, Iowa, that the October issue of PROFILE is being placed on microfiche as well as on computerized tape by the Iowa Career Information Service. Approximately 700 participating secondary, and post-secondary schools, colleges and vocational-technical schools throughout Iowa will benefit from this procedure.

Thanks to Francis P. Scott, guidance counselor at Miami Norland Senior High School, Miami, for adopting PROFILE as the official publication of the school's Armed Forces Club.

MISSION:
DESTROY HOSTILE AIRCRAFT

Editor's note: The author wishes to thank the Joint Public Affairs Office, Marine Corps Air Station Cherry Point, N.C. and in particular Staff Sergeant Ken Boss, for assistance in providing material for the following article.

A long trail of technical development has brought the Marine Corps anti-aircraft warfare capabilities from a collection of machine guns, flak batteries, searchlights and sound detectors to the mobile, missile-armed air defense of today.

The Corps' air defense story began in 1938 with the adoption of the biplane used for scouting and close air support in the amphibious assault. At that time air defense centered around the machine gun, which is in stark contrast to the Corps' present arsenal of sophisticated Hawk and Redeye missiles.

For First Lieutenant Robert A. Dean III, a member of Cherry Point's Third Light Anti-Aircraft Missile Battalion (3d LAAM Bn.), the Hawk system has given him

Lance Corporal Gale A. Crom uses the high power illuminator sighting scope to align his radar set with other Hawk missile sets. (Photo by Tony Delgado)

the challenge he wants. "It's a technical field that isn't too administrative and it's a combat-related field that offers me the opportunity to be in the field working closely with other Marines."

Private First Class Paul J. Frank, a native of Glenrock, N.J., views his experiences with the Hawk as a stepping stone to a future in advanced electronics work. To some the day-to-day job may seem repetitious and boring. Since completing eight weeks' training at the Army's missile training facility at Ft. Bliss, Tex., Frank spends long hours adjusting knobs and checking dials and switches of the Hawk's different radar equipment.

Hawk is a surface-to-air missile system, designed to cope with high-speed, low-flying aircraft. It is just as effective against targets at medium to high altitudes.

The missile is the first surface-to-air system to use radars that provide its low altitude capability. They can see the blind zone of conventional radar. From the mass of radar echoes reflected by ground objects such as hills, buildings, trees or vehicles, the acquisition radar picks out the echo from an aircraft, an illuminator radar tracks it automatically, and the missile is launched to the target.

Private First Class David Hershey (left) and Corporal Mike Wheeler run a routine systems check on the Hawk system's high power illuminator radar set. (Photo by Tony Delgado)

Sergeant Mike Burgess, a missile launch operator, makes final adjustments on a Hawk launcher in the field battery position, ready for firing. (Photo by SSgt. Ken Boss)

First Lieutenant Wes Clymer (right), "A" Battery, 2d LAAM Bn. commanding officer, checks with one of his Hawk illuminator radar operators to insure the set is ready for action. (Photo by SSgt. Ken Boss)

Lance Corporal George Dixon, Hawk system pulse acquisition radar operator, stands by as the set he works on is put through its pre-operational check. (Photo by SSgt. Ken Boss)

The Hawk system is highly mobile and can be rapidly set up. It can be moved on highways or cross-country by tactical vehicles, on water by landing craft and in the air by transport aircraft or helicopter. Its extreme mobility and simplicity make it very versatile.

Basically a mobile system for use with fast-moving combat troops, Hawk can also be readily set up for the defense of cities or military installations.

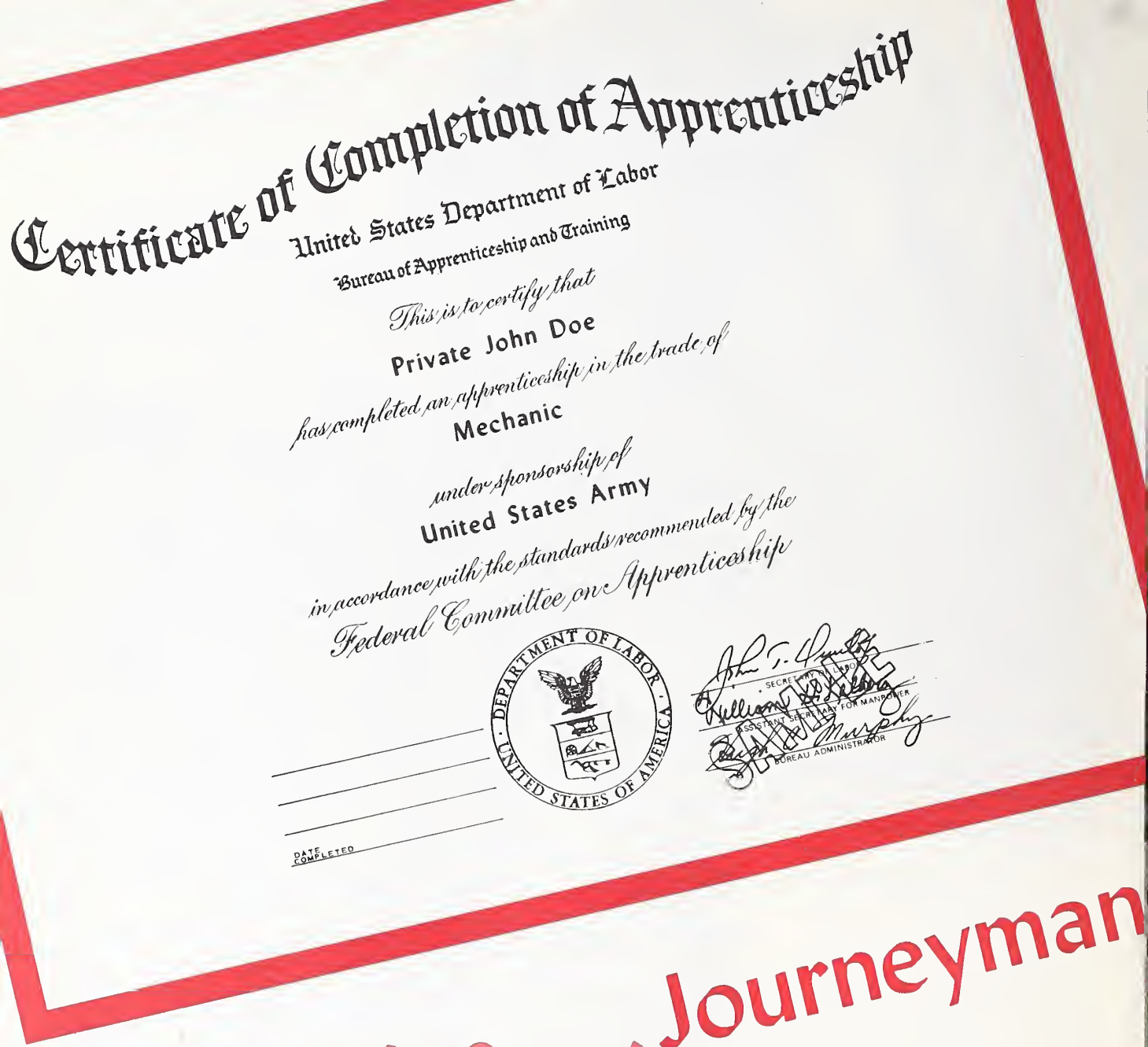
Within 3d LAAM Bn. there is a select group of Marines who are trained in the use of the Redeye missile. For the men of the Second Forward Area Air Defense (2d FAAD) platoon, Redeye is the ultimate defense available to the Marine infantryman against attack from the screaming monsters from the air.

Redeye is a man-portable weapon fired from the shoulder that seeks out and destroys high and low speed aircraft. It tracks its target after firing through infra-red sensors, making it easier for a lone man to take on the ultra-sophisticated airborne weaponry of the 1970s.

The mission of any air defense unit is to detect, identify, track, and destroy hostile aircraft. When combined, the Redeye and Hawk missile systems represent a major obstacle to air attack by an enemy force.

By Tony Delgado

Marines of 2d FAAD demonstrate the tactical use of a Redeye missile. (Photo by SSgt. Steve Manuel)


Certificate of Completion of Apprenticeship
United States Department of Labor
Bureau of Apprenticeship and Training
This is to certify that
Private John Doe
has completed an apprenticeship in the trade of
Mechanic
under sponsorship of
United States Army
in accordance with the standards recommended by the
Federal Committee on Apprenticeship
DEPARTMENT OF LABOR
UNITED STATES OF AMERICA
DATE COMPLETED
BUREAU ADMINISTRATOR

Apprentice. . . Journeyman

By Carol Nelson

Sometimes, young people decide to try the Army for a while just to get their heads together. Others feel they need to pick up a skill or learn a trade.

That's OK with the Army — in fact, there are new ways for soldiers to use their Army time to learn things that will help them get solid jobs when they get out.

Sheet metal workers, mechanics, carpenters, electricians, cooks and specialists in more than one hundred other jobs are now enrolling in apprenticeship programs. Their military schooling and experience can stack up to qualify them for jobs with civilian employers.

Machinist

Over the last couple of years, the Army has cooperated with the Department of Labor to develop the apprenticeship idea. What started with workers in military engineering fields quickly spread to many other trades as more and more jobs were adapted and enlisted people signed up.

Modeled after the same programs as those used in private industries, Army apprenticeships require:

* one to four years working on the job, totalling from 2,000 to 8,000 hours, depending on the trade.

* 144 hours of theoretical (classroom) training for every 2,000 hours of work experience.

Once the apprentice has proved he knows what he's doing, he is awarded a Certificate of Completion of Apprenticeship by the Bureau of Apprenticeship and Training — and instead of calling himself an apprentice, he is now known as ''journeyman.'' Of course, the program is turning out certified ''journeywomen,'' too!

Apprentices keep track of their hours in training and job assignments in a carefully filled-in log book. The log shows coded skills to be performed and the number of hours to be spent on each. When all tasks are checked off, it serves as the documentation needed to finish the program. Supervisors check log books periodically to make sure they are being filled in properly and that each worker is progressing.

Although you can't enlist to become part of the apprenticeship program, you can choose to enter one of the occupational specialties included in the growing list which participate. As soon as basic training is over, soldiers can start their logs during advanced skill training. Those who came into the Army with job experience in an apprentice skill may be put to work directly after basic training. Pre-Army experience can count for up to 50 per cent of the log book requirements.

Crane operator

Cook

Personal initiative is the biggest requirement — enrolling, keeping up the log book, getting the classroom hours. The Army will not push a person through the program. Some apprentices find that the Army's needs come before theirs. Soldiers get transferred to different posts where they may lack the type of equipment or shop specified by their apprenticeship. Or they may be put into another specialty which has a different set of apprenticeship requirements. Once in a while, extra things shared by all soldiers, like guard duty, cutting grass or going out on bivouac, can cut into an apprenticeship schedule.

Eventually, most apprentices get back on track and are able to finish their chosen program and receive their certificates. With so much to do, it's hard to finish by the end of the first enlistment. Apprentices can reenlist or get out and apply the accumulated hours toward a certificate from a civilian trade school or to join a union. Any way they do it, they're ahead of the game in the civilian job market.

It should be emphasized that apprenticeships during

Aviation electrician

military service are for documentation only. Becoming an apprentice doesn't change the way a soldier is treated, where he is assigned or when he can be promoted. Participation is simply a way to show civilian employers what has been accomplished, in a format they can easily understand.

Does it really work? Well, the program is still new and going through test phases. Few of those who rushed to sign up have had time to finish their chosen courses. Soldiers have commented that they like the recognition they're getting. An apprentice plumber says, "I have the feeling I'm getting somewhere. I figured I might as well have something to show for what I'm doing every day. I think the (apprenticeship) program is a good thing and I'm getting other guys interested in it."

Apprenticeships are good news for the Army, too. Starting down the long road to journeyman status helps keep up soldiers' interest and pride in their jobs.

A new way to make the years spent in the Army more meaningful — that's the apprenticeship program.

Heavy equipment operator

What soldiers think

Muskogee, Okla., native Rick Hall is working as an apprentice crane operator at Ft. Eustis, Va. Lifting and moving items that weigh up to 100 tons, Rick moves the controls of a floating crane on the quiet back waters of the James River. He says, "Where else but in the Army could a Specialist 4 be given so much responsibility? On the outside, I probably couldn't start out operating a crane — I would have to go through several other jobs first. But in this (apprenticeship) program, I get hours on the equipment, plus I'm learning about many other phases of construction."

Rick entered the Army in May 1976 and took advanced individual training at Ft. Eustis. So far, he has accumulated more than 300 hours toward the required 6,000 hours needed to become a jouneyman crane operator. He hasn't decided whether he will stay in the Army and finish the program or get out and try for a job based on what he has already learned.

Specialist 4 Mike Edwards, with the 73rd Transportation Company at Ft. Eustis, is about halfway finished with an 8,000 hour machinist apprenticeship. "There's no way I can finish it in this shop. We just don't have the new equipment that union shops are using. I get in a little work every day turning out parts for the units around here, but I can't do much. The Army is behind the times — I plan to get out and go home to Wabash, Ind. and look for work there."

Mike took advanced Army training at Aberdeen Proving Ground, Md. in 1975. He found out about apprenticeship programs through the Education Center and decided he might as well have documented proof of what he has done.

"I'm a career man," says Staff Sergeant Bill Clark, "so I guess I'll be able to complete my apprenticeship." Bill, from Philadelphia, Miss., already has 11 years in the Army and has been credited with 3,000 of the 6,000 necessary hours for an electrician's certificate, based on his prior training and experience. "I came into the apprenticeship program with an advantage. Right now, I'm teaching electrical repair for Army aircraft at Ft. Eustis' technical school, and all my classroom hours count. Apprenticeship is a good deal if you're serious about getting somewhere. I tell my students about it — especially since the 432 hours they spend at this school count for apprenticeship. It's also important to keep learning in this field — I want to understand everything about electricity — and apprenticeship requires that you study theory and related subjects."

Scientists' paradise:

ANTARC

By Flo Dunn

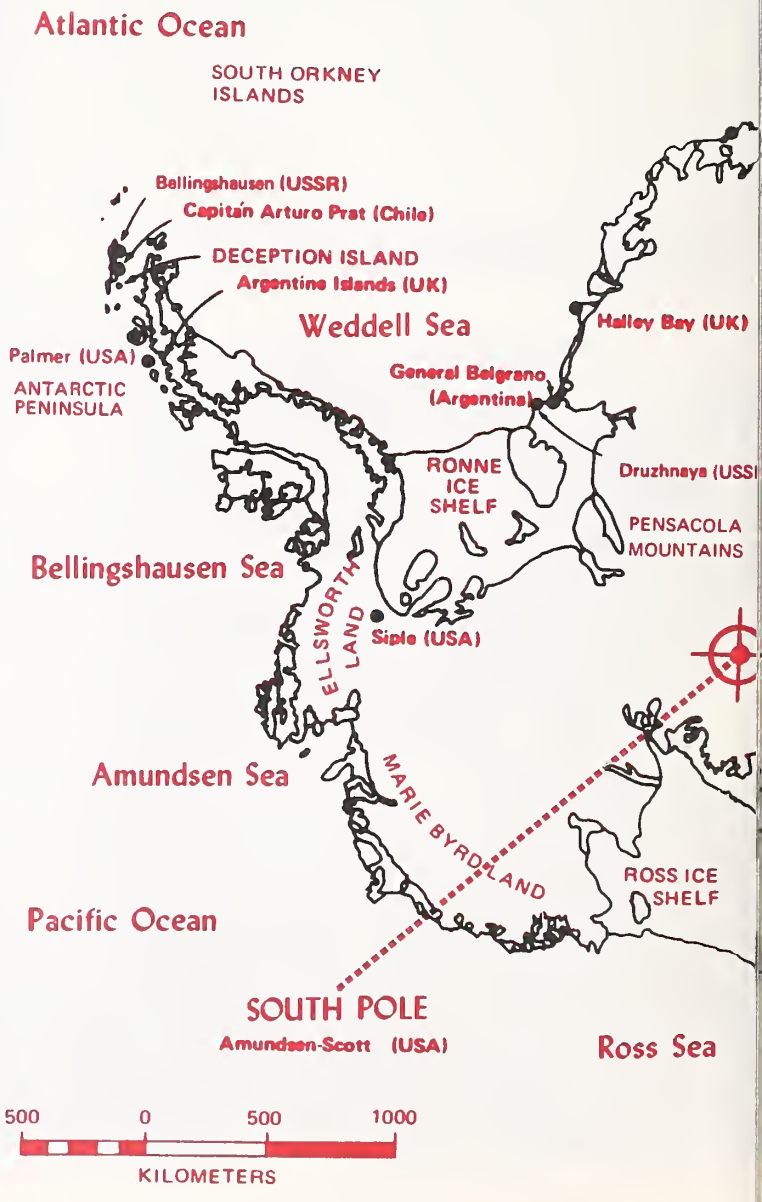
The author thanks Marine Corps Major Robert J. Bradley, deputy director, Fleet Home Town News Center, Norfolk, Va., a recent South Pole returnee, for relating some of his experiences "on the ice."

Where is the world's largest and windiest desert? Where are rust and corrosion nonexistent? Most would guess the Sahara in Africa, however the continent of Antarctica has these distinctions. It's also the earth's coldest place.

Scientists and explorers from many countries have learned these and many other interesting phenomena which occur around the South Pole.

The National Science Foundation (NSF), Washington, D.C., is responsible for the overall management of the American scientific exploration in Antarctica. The Navy provides logistical and operational support for the U.S. Antarctic Research Program (USARP). The United States, represented by more than 900 personnel, operates four stations year 'round. McMurdo Station, the largest, is headquarters for NSF and the commander of Task Force 199, which carries out Operation Deep Freeze.

Like a United Nations on ice, 19 countries work together harmoniously to learn more about the mysteries of Antarctica. Some of the nations are Japan, New Zealand, Russia, France, Australia, China and the United Kingdom. All share information, equipment, people and ideas, and often visit each other's facilities.



TICA

Major Robert J. Bradley stands next to the South Pole marker.

The Antarctic Treaty provides that, "...Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord." It works without any provisions for civilian or military police. This spirit of international cooperation is not found anywhere else.

Assisting the scientists and providing logistical support to Task Force 199 are officers and enlisted people of the Navy, Army, Air Force and Coast Guard. They arrive in mid-spring (October) and depart in early fall (March). The winter in Antarctica is simply too harsh for a full-scale effort so only a small crew of volunteer scientists and sailors "winter over."

Even though it's cold, Antarctica doesn't lack for life. There are many types of whales and fishes and a variety of algae and microscopic organisms in the water surrounding the continent. The ice and abundance of potential protein sources in the waters could someday be answers to the increasing world-wide need for fresh water and food.

Its land mass is almost equal to the size of the United States and Mexico combined and is covered by more than seven million cubic miles of ice (or about 95 per cent of the world's fresh water). Topography ranges from great stationary ice shelves to the barren desert of the Polar Plateau. Surprisingly, the average accumulation of snow is less than two inches a year.

Penguins are the "first citizens" of the South Pole. The chick of an Emperor penguin rests on its mother's feet to keep warm. The adult walks with the chick in this position.

Seasons are reversed from those in the Northern Hemisphere. Winter in the United States is summer in Antarctica. Summers are cold, but coastal temperatures hover around the freezing mark. Even in the summer, winds often reaching an incredible velocity of 100 miles per hour (exceeding hurricane force) stop all outdoor activity. Winter's six months of darkness also keep everyone indoors.

According to Maj. Bradley, each individual who travels by air is required to lug a bright orange bag containing a complete issue of survival gear. The 60-pound bag is cumbersome but travelers know that if the aircraft goes down, this bag could save their lives. It contains a parka, gloves, socks, cold weather boots, wind trousers, hat and thermal underwear. Medical supplies and food are routinely kept in the aircraft.

Red is the predominant color since it can be seen for a long distance and is easily recognized by crews conducting search and rescue missions. Aircraft, vehicles and ice breakers are painted red.

One of the many dangers created by antarctic cold is the extensive lack of moisture; one is not aware of how cold it really is. This is why the "buddy system" is used outdoors. Maj. Bradley remarked, "When someone's nose turns pink with white spots, it's time to get him inside." The dry climate has its advantages also. Equipment does not rust or corrode. Some of the equipment has been used since the '50s.

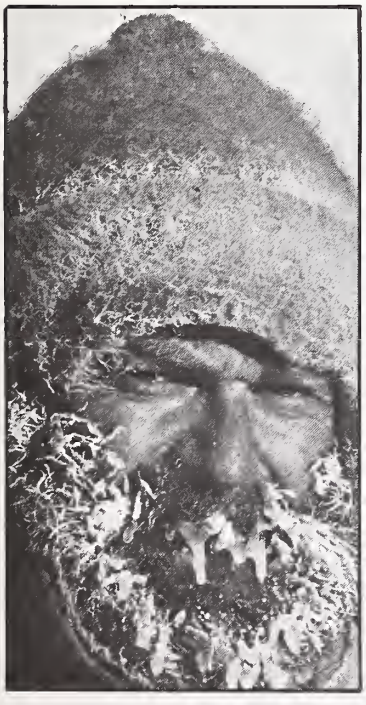
The military is also involved in keeping cargo moving. The Navy provides most of the personnel; freighters and oil tankers are furnished by the Military Sealift Command. Aerial transports come from the Air Force's Military Airlift Command. The Coast Guard furnishes icebreakers and transportation movement specialists come from the Army.

Military personnel, including 15 Navy enlisted women, do more than operate McMurdo Station. They often aid the scientists in field projects such as banding penguins, gathering geological specimens or collecting marine life from the ocean bottom beneath the ice shelves.

The most obvious support provided by the military is aerial transportation. Air Force C-141 Starlifter jets shuttle people, priority equipment and supplies between Point Mugu, Calif. (the USARP/Deep Freeze permanent assembly area), Christchurch, New Zealand (the jumping off point for "the ice") and the frozen continent. The C-141s make wheeled landings at McMurdo on an ice runway. Once there, Navy pilots and aircrews from Antarctic Development Squadron (VXE-6) take charge. Affectionately known as "Penguin Airlines," VXE-6 flies both helicopters for support of coastal explorations and LC-130 Hercules transports. The "Hercs" are equipped with skis and provide the only means to resupply the American stations in the interior.

A VXE-6 pilot summed up his squadron's mission as being similar to "resupplying Minneapolis from

It's hard to imagine any spot in Antarctica without ice, but the Dry Valley is one area. Note the odd wind-swept rocks in the foreground. (Photo by Major Robert J. Bradley)



Wool caps with parka are standard gear for personnel in the antarctic. A warm head helps keep hands and feet warm.

Philadelphia solely by propeller-driven airplanes."

The entire continent is one big laboratory — fascinating but also dangerous. A land of active volcanoes, icebergs as large as 30 miles wide which can be used as landing strips, mirages and "whiteouts" which really test a traveler's sense of direction. "Whiteouts" are severe weather conditions caused by antarctic winds pushing large crystals of ice. Visibility is zero. Travelers can become completely disoriented and lost going from one building to another.

There are continuing scientific studies in atmospherics and marine biology. Coast Guard icebreakers support research programs in marine biology, oceanography and meteorology. McMurdo is the center for U.S. studies in earth sciences.

There are neither polar bears nor Eskimos in Antarctica (they inhabit the **Arctic**). The only animal life forms ashore are several species of seals, two species of penguins and a breed of very large seagulls (called the skua).

"I found the penguins to be fascinating," said Maj. Bradley, "They're friendly, curious and unafraid of anything on land. When they're not moving, they normally stand in a circle and when they're traveling they go single file."

He continued, "Catching one of them, especially an Emperor, is an art. You have to go up behind it, drop to your knees, then give it a bear hug. You don't want to crush it, but you have to make sure you have both its wings pinned. Penguins are very strong and will leave bruises, even broken bones if they hit you with their flippers (wings).

Emperors are large and can weigh as much as 80 pounds. The Adelie is about the size of a football. Their comic waddling and cute appearance is offset by their odor; due to a large concentration of oil in their bodies, they're very foul-smelling creatures.

"Antarctica is really a hardship tour. The operation never ceases. Off-duty

time is scarce and is spent playing cards or shuffleboard. Mailcall is held whenever the next plane arrives. Basic necessities are sold in the exchange.''

He continued, ''Living conditions, while adequate, are not the most comfortable. Family separations are never easy to adjust to.

''Everyone looks forward to meal time. The chow is excellent and is just like back in the states. There's just more of it in Antarctica because you burn it off in the cold,'' he added.

Maj. Bradley explained that the normal duty uniform consists of standard service work uniform, long underwear with the cold weather protective trousers, parka and gloves. Sunglasses are a ''must'' to prevent snow blindness. Footwear can be lightweight boots called mukluks or cold-weather ''bunny'' boots.

Why does one volunteer to go to Antarctica where duty is less than desirable and the elements of nature are unpredictable and barely tolerable? Many go because of the challenge of duty at one of the world's last frontiers, some go out of curiosity, others for the chance to save money and still others because ''it looks good on my service record.''

Antarctica still holds many secrets in spite of years of research. But it is one place where military and civilian people from throughout the world have found the secret for harmonious living.

An active volcano is surrounded by ice in Antarctica. Scientists conduct studies inside. (Photo by Major Robert J. Bradley)

An oiler, assisted by a Coast Guard icebreaker, arrives at the ice pier, McMurdo Station, Antarctica.

Missiles awaaay!

By Aaron Williams

The planes are in the air...missiles at the ready. The pilot punches the release switch, nothing...an entire practice mission is a washout.

To make sure this doesn't happen, the missile launch mechanism is checked as closely before each flight as any other part of the aircraft and its systems.

Missile release specialists are just what the name implies. Their job is to insure the missile is released when activated.

These men and women generally have a scholastic background in electronics, mechanics, practical mathematics, maybe some physics and shop work.

"Our mission is to fly and fight, and don't you forget it," said General John D. Ryan when he was the United States Air Force Chief of Staff.

Those who do the actual flying make up only a small percentage of the total Air Force strength. The mission of those who do not fly is to support those who do. It takes teamwork honed to a razor sharp edge. Past wars have given ample evidence of the effectiveness of this teamwork.

To insure that everyone works as a team when needed, takes constant practice, not only for the pilots but also for those who support them.

Before aircraft and associated weapons systems became as sophisticated as they are today, ground crewmen with limited skills could keep the planes in the air and functioning to fulfill the mission.

Senior Airman Carl E. Houk checks the missile launcher prior to takeoff of an F-4 assigned to the 388th Tactical Fighter Wing, Hill AFB, Utah.

Major repairs or maintenance is done in the shop.

Selection is based on job knowledge and performance, self-improvement, leadership in social, cultural or religious activities in the military and/or civilian community, and accomplishments which distinguish the individual from others of equal or higher grade. The selectee must be an articulate and positive spokesperson for the Air Force.

Along with technological advances in equipment, men and women in today's Air Force are knowledgeable, well trained and involved in living a full life.

Not so now. With the advancements in planes, comes corresponding progress in weapons and weapons systems and the need for higher skilled men and women to keep these systems in proper working order.

The job isn't an 8 to 5 operation since wars aren't fought on such a timetable. Aircraft fly at all hours, during all kinds of weather and when the planes fly, the support people are there.

Senior Airman Carl E. Houk is one of these vital Air Force team members. Assigned to the 388th Tactical Fighter Wing, Hill Air Force Base, Utah, Houk does his job well.

He is also actively involved in both base and community activities. His job performance and community involvement were recognized when Houk was selected by the Air Force as one of its Outstanding Airmen of 1977. Each year, 12 enlisted members are picked from almost half a million.

Maintenance completed, the missile launcher is re-installed on the aircraft.

Return of the F-4 Phantom jet signals a debrief with the crew to insure the equipment worked properly.

Carl Houk, a vital team member, dedicated to insuring the Air Force can carry out its mission if the need arises.

Guardians of the Eighth Sea

By Paul Short

The Coast Guard men and women who work and patrol the more than 95,000 square miles of fresh water sprawled between New York and Minnesota call it the "Eighth Sea." And if you stop to consider their overall size and the commercial and recreational traffic that plies their blue waters, the Great Lakes do resemble an inland sea.

Ore and coal carriers, fuel oil barges and dry cargo ships from the Atlantic, known here as "Salties," crisscross the five Great Lakes and sail the St. Lawrence Seaway to service the industrial giants of the Midwest.

Men and women of the Ninth Coast Guard District work and play here, too. They are the "Guardians of the Eighth Sea." More than 2,500 Coast Guard personnel operate large cutters, small rescue boats, inspection offices, lighthouses and port safety stations. It is a challenging mission for the Coast Guard.

There are more than 5,000 miles of shoreline extending from western New York to Eastern Minnesota. Working these waters to help and protect commercial shipping and recreational boating requires the efforts of every kind of occupational rating in the Coast Guard.

Californian Keith Roberts is training on the job as a seaman aboard a rescue boat at the Coast Guard's station in Ashtabula, Ohio. Just a little more than

Struggling through brash ice near Buffalo, the Cutter Ojibwa toils to keep shipping lanes open in eastern Lake Erie.

a year ago he was a student at Serramonte High School in Daly City. Keith's duties include upkeep and maintenance of motor lifeboats plus the handling of lines, steering and navigation.

Last November, when Keith and the rest of his boat's crew were on standby duty, a call came to assist a small child in the water near the Coast Guard station. Quickly arriving on scene, the Coast Guardsmen began scanning the surface for the victim. Suddenly, one of the men noticed the child, floating face down in the water. Clad in a wet suit, Keith jumped into the 39 degree water without hesitating.

"When I got to the baby I noticed it was completely still. I didn't know if it was dead or alive," Keith recalls. Cradling the infant in his arms, he fought his way to the dock where another Coast Guardsman took the child to a waiting police car. With two Coast Guardsmen administering mouth-to-mouth resuscitation, the police car raced to a hospital. The child lived, apparently with no ill effects from its ordeal. Seaman Roberts was later awarded the Coast Guard Commendation Medal.

Not all rescue cases in the Great Lakes region are as dramatic as this one. Much of the work performed by the rescue stations' small boats could be categorized as routine. Towing in

Dwarfed by a huge bridge abutment, two Coast Guardsmen putt-putt down the Cuyahoga River on a harbor patrol.

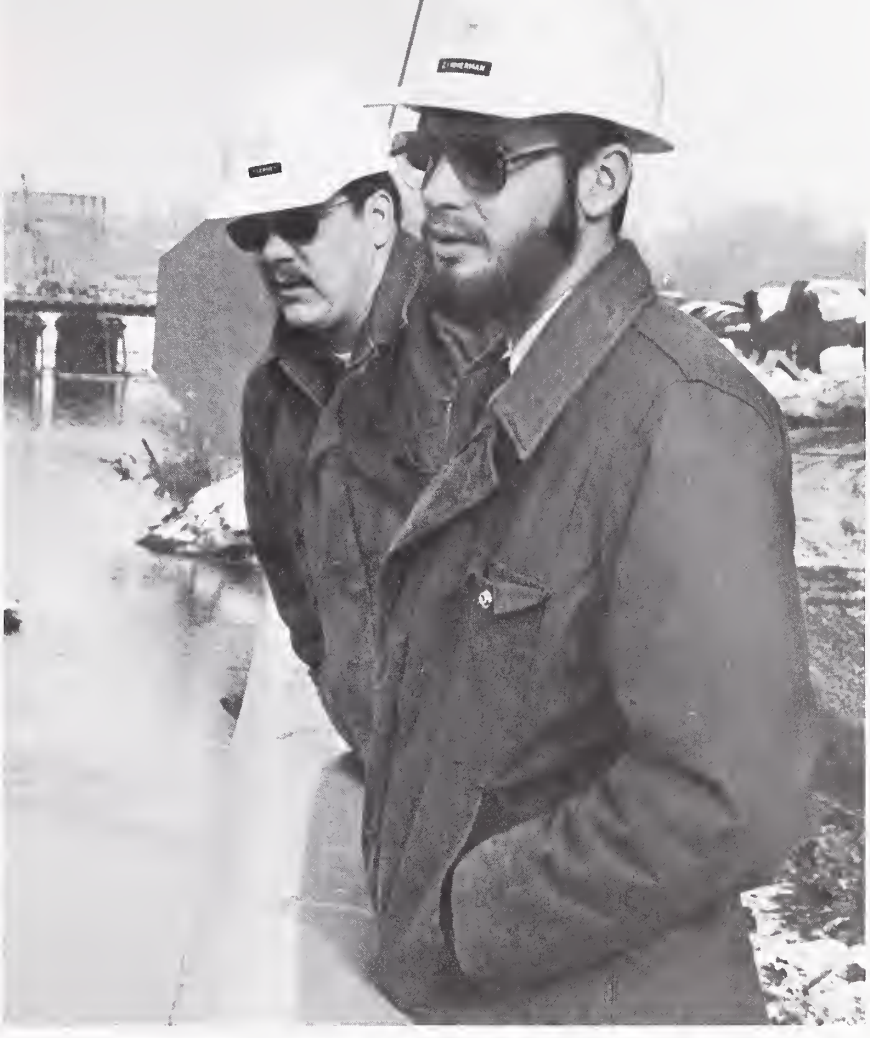
Ice sculpture smothers St. Joseph, Mich., Harbor Light during a typically harsh winter on the "Eighth Sea."

outboard motor boats that have run out of gas, helping a fisherman restart a flooded engine or giving first aid to a houseboat camper are routine. Or, for the aircrewmen from the Ninth District's three air stations (Detroit, Traverse City, Mich. and Glenview, Ill.) airdropping portable pumps or medicine to distressed boatmen is another task.

Besides protecting the region's people, the Coast Guard is often called on to protect the environment. Boatswain's Mate Second Class Chris Zimmerman is trained as a boat coxswain, deck maintenance specialist and oil pollution investigator. Chris graduated from high school in Sparta, Wis., and then decided to see what the Coast Guard had to offer. One of his first assignments was aboard the icebreaker Mackinaw, helping to keep the lakes open for commercial shipping. Now he is a patrolman with the Captain of the Port office in Cleveland, investigating pollution incidents.

In this predominately industrial area, fighting pollution sometimes seems like a losing battle. It is a fight that must be waged, however, if the tide is to be turned. Chris' daily rounds take him to many of the waterfront facilities in Cleveland. He stays constantly alert for any sign of pollution or potential pollution. He is very matter-of-fact about what he must do if pollution is discovered.

"If pollution is suspected, samples must be taken and a course of action determined. Fines as well as clean-up costs may be imposed on the guilty party," he says. The samples, observations and other action taken at the scene by the patrolman will determine the outcome of pollution cases.



Petty Officers Chris Zimmerman (foreground) and Fred Tierney scan a portion of the Cuyahoga River.

Of all the duties here in the "Eighth Sea," none is more demanding than breaking ice through the long, bitter winters. Ships of all sizes and descriptions team up to keep shipping moving for as long as possible. It seems as soon as one channel is cleared of the brash ice and a tanker or ore carrier moves safely into port, the ice once again closes.

Why is it so important to keep commerce flowing in the lakes? Well, for one reason many small communities depend on coal or fuel oil to heat their homes. Coal is also used to fire the furnaces in factories that provide millions of jobs. Power plants use coal to generate electricity that heats and lights homes, hospitals and businesses.

During a typical Great Lakes winter, crews on the 100-foot Coast Guard tug Raritan can expect to spend more than 100 days away from its Grand Haven, Mich., moorings, while battling ice. With less than 20 men, these small "ice-fighters" churn through the ice-clogged channels, sometimes 24 hours a day. It's a team effort all the way. While boatswain mates and quartermasters pilot the tug, the machinery technicians down in the engine room are just as responsible for the ship's success in the ice even though they may not get above decks for hours at a time.

So for better or worse, summer or winter, this is the Eighth Sea. Beautiful in many ways, scarred by man and his machinery in others, it is an important region for the American economy as well as a treasured vacation land for its people. Behind the scenes, the young, well-trained "Guardians" plug away at dozens of tasks some of them romantic, some of them mundane, but all of them important in the overall picture of the Great Lakes.

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